

THAT WHICH IS CLAIMED:

1. A figure-eight fiber optic drop cable comprising:

a messenger section, the messenger section having a strength component and a messenger jacket;

5 a carrier section, the carrier section having at least one

optical waveguide and at least one roving, the at least one roving being attached to the carrier jacket, the carrier section having an average shrinkage of about 0.5% or less during an average shrinkage test, wherein the average shrinkage test

10 comprises taking a 1 meter sample of the carrier section that is separated from the messenger section and exposing the 1 meter sample of the carrier section to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of  
15 the 1 meter sample is measured; and

a web, the web connecting the messenger jacket with the carrier jacket.

2. The figure-eight fiber optic drop cable according to claim

20 1, wherein an average coefficient of thermal expansion (CTE) of the carrier section after being separated from the messenger section is about  $5.0 \times 10^{-3} \text{ %}/\text{°C}$  or less.

25 3. The figure-eight fiber optic drop cable according to claim 1, wherein an average coefficient of thermal expansion (CTE) of the carrier section after being separated from the messenger section is about  $4.0 \times 10^{-3} \text{ %}/\text{°C}$  or less.

4. The figure-eight fiber optic drop cable according to claim 30 1, wherein a maximum delta attenuation of the at least one optical waveguide of a separated carrier section during thermal cycling is about 0.3 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about -40°C.

5. The figure-eight fiber optic drop cable according to claim 1, wherein a maximum delta attenuation of the at least one optical waveguide of a separated carrier section during thermal cycling is about 0.1 dB/20 meters or less at a reference 5 wavelength of about 1550 nm at a temperature of about -40°C.

6. The figure-eight fiber optic drop cable according to claim 1, the resin matrix of the at least one roving having a percentage by weight of about 7 percent or less, the resin matrix 10 being a water-based acrylic composition that includes an ethylene-acrylic acid.

7. The figure-eight fiber optic drop cable according to claim 1, the carrier section having four or fewer rovings. 15

8. The figure-eight fiber optic drop cable according to claim 1, the carrier section having an average shrinkage of about 0.3% or less during a average shrinkage test, wherein the average shrinkage test comprises taking a 1 meter sample of the carrier 20 section that is separated from the messenger section and exposing the 1 meter sample to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1 meter sample is measured.

25 9. The figure-eight fiber optic drop cable according to claim 1, the at least one roving being embedded within the carrier jacket.

30 10. The figure-eight fiber optic drop cable according to claim 1, the carrier section being a tubeless design.

11. The figure-eight fiber optic drop cable according to claim 1, a difference between the average shrinkage and an excess fiber length (EFL) being about 0.5% or less.

5 12. A figure-eight fiber optic drop cable comprising:  
a messenger section, the messenger section having a strength component and a messenger jacket;  
a carrier section, the carrier section having at least one optical waveguide and at least one roving, the at least one roving having a resin matrix having a percent by weight of about 10 percent or less, and a carrier jacket, the at least one roving being attached to the carrier jacket, wherein an average coefficient of thermal expansion (CTE) of the carrier section after being separated from the messenger section is about  $5.0 \times 10^{-3} \text{ %}/^{\circ}\text{C}$  or less, thereby preserving the optical performance of the at least one optical waveguide; and  
a web, the web connecting the messenger jacket with the carrier jacket.

20 13. The figure-eight fiber optic drop cable according to claim 12, wherein a maximum delta attenuation of the at least one optical waveguide of a separated carrier section during thermal cycling is about 0.3 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about  $-40^{\circ}\text{C}$ .

25 14. The figure-eight fiber optic drop cable according to claim 12, wherein a maximum delta attenuation of the at least one optical waveguide of a separated carrier section during thermal cycling is about 0.1 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about  $-40^{\circ}\text{C}$ .

30 15. The figure-eight fiber optic drop cable according to claim 12, the resin matrix of the at least one roving having a percentage by weight of about 7 percent or less, the resin matrix

being a water-based acrylic composition that includes an ethylene-acrylic acid.

16. The figure-eight fiber optic drop cable according to claim

5 12, the carrier section having four or fewer rovings.

17. The figure-eight fiber optic drop cable according to claim 12, the carrier section having an average shrinkage of about 1.0% or less during an average shrinkage test, wherein the average

10 shrinkage test comprises taking a 1 meter sample of the carrier section that is separated from the messenger section and exposing the 1 meter sample to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1

15 meter sample is measured.

18. The figure-eight fiber optic drop cable according to claim 12, the carrier section having an average shrinkage of about 0.5% or less during an average shrinkage test, wherein the average

20 shrinkage test comprises taking a 1 meter sample of the carrier section that is separated from the messenger section and exposing the 1 meter sample to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1

25 meter sample is measured.

19. The figure-eight fiber optic drop cable according to claim 12, wherein an average coefficient of thermal expansion (CTE) of the carrier section after being separated from the messenger

30 section is about  $4.0 \times 10^{-3} \text{ } ^\circ\text{C}$  or less.

20. The figure-eight fiber optic drop cable according to claim

12, the at least one roving being embedded within the carrier jacket.

21. The figure-eight fiber optic drop cable according to claim 12, the carrier section being a tubeless design.

5 22. The figure-eight fiber optic drop cable according to claim 12, a difference between an average shrinkage of the carrier section that is separated from the messenger section and an excess fiber length (EFL) being about 0.5% or less.

10 23. A figure-eight fiber optic drop cable comprising:  
a messenger section, the messenger section having a strength component and a messenger jacket;  
a carrier section, the carrier section having at least one optical waveguide and at least one roving, the at least one roving having a resin matrix having a percent by weight of about 10 percent or less, the resin matrix being a water-based acrylic composition that includes an ethylene-acrylic acid, and a carrier jacket, the at least one roving being attached to the carrier jacket, thereby inhibiting buckling of the carrier section when separated from the messenger section so that a maximum delta attenuation of the at least one optical waveguide during thermal cycling of a separated carrier section is about 0.3 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about -40°C; and  
25 a web, the web connecting the messenger jacket with the carrier jacket.

24. The figure-eight fiber optic drop cable according to claim 23, the resin matrix of the at least one roving having a percentage by weight of about 7 percent or less.

25. The figure-eight fiber optic drop cable according to claim 23, the carrier section having four or fewer rovings.

26. The figure-eight fiber optic drop cable according to claim 23, the carrier section having an average shrinkage of about 1.0% or less during an average shrinkage test, wherein the average shrinkage test comprises taking a 1 meter sample of the carrier 5 section that is separated from the messenger section and exposing the 1 meter sample to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1 meter sample is measured.

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27. The figure-eight fiber optic drop cable according to claim 23, the carrier section having an average shrinkage of about 0.5% or less during an average shrinkage test, wherein the average shrinkage test comprises taking a 1 meter sample of the carrier 15 section that is separated from the messenger section and exposing the 1 meter sample to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1 meter sample is measured.

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28. The figure-eight fiber optic drop cable according to claim 23, wherein an average coefficient of thermal expansion (CTE) of the carrier section after being separated from the messenger section is about  $5.0 \times 10^{-3}$  %/°C or less.

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29. The figure-eight fiber optic drop cable according to claim 23, wherein an average coefficient of thermal expansion (CTE) of the carrier section after being separated from the messenger section is about  $4.0 \times 10^{-3}$  %/°C or less.

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30. The figure-eight fiber optic drop cable according to claim 23, wherein the maximum delta attenuation of the at least one optical waveguide of a separated carrier section during thermal

cycling is about 0.1 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about -40°C.

31. The figure-eight fiber optic drop cable according to claim 5 23, the at least one roving being embedded within the carrier jacket.

32. The figure-eight fiber optic drop cable according to claim 23, the carrier section being a tubeless design.

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33. The figure-eight fiber optic drop cable according to claim 23, a difference between an average shrinkage of the carrier section that is separated from the messenger section and an excess fiber length (EFL) being about 0.5% or less.

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34. A fiber optic drop cable comprising:

at least one optical waveguide, the optical waveguide being disposed with the fiber optic cable;

20 at least one flexible roving, the at least one flexible roving having a resin matrix having a percent by weight of about 10 percent or less, the resin matrix being a water-based acrylic composition that includes an ethylene-acrylic acid; and

25 a cable jacket, wherein the at least one flexible roving is attached to the cable jacket, thereby inhibiting buckling of the cable jacket so that a maximum delta attenuation of the at least one optical waveguide during thermal cycling is about 0.3 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about -40°C.

30 35. The fiber optic drop cable according to claim 34, the resin matrix of the at least one flexible roving having a percentage by weight of about 7 percent or less.

36. The fiber optic drop cable according to claim 34, the fiber optic cable having an average shrinkage of about 1.0% or less during an average shrinkage test, wherein the average shrinkage test comprises taking a 1 meter sample and exposing the 1 meter sample to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1 meter sample is measured.

10 37. The fiber optic drop cable according to claim 34, wherein an average coefficient of thermal expansion (CTE) of the fiber optic cable is about  $5.0 \times 10^{-3}$  %/°C or less.

15 38. The fiber optic drop cable according to claim 34, the fiber optic cable being a tubeless design.

20 39. The fiber optic drop cable according to claim 34, wherein a maximum delta attenuation of the at least one optical waveguide during thermal cycling is about 0.1 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about -40°C.

40. The fiber optic drop cable according to claim 34, the cable having two rovings and a difference between an average shrinkage of the cable and an excess fiber length (EFL) being about 0.5% or less.

41. A fiber optic drop cable comprising:  
at least one optical waveguide, the optical waveguide being disposed within the fiber optic cable;  
at least one flexible roving, the at least one roving having a resin matrix having a percent by weight of about 10 percent or less; and

a cable jacket, the at least one flexible roving being attached to the cable jacket, wherein an average coefficient of thermal expansion (CTE) of the fiber optic cable is about  $5.0 \times 10^{-3} \text{ %}/\text{ }^{\circ}\text{C}$  or less, thereby preserving the optical performance of  
5 the at least one optical waveguide.

42. The fiber optic drop cable according to claim 41, wherein a maximum delta attenuation of the at least one optical waveguide during thermal cycling is about 0.3 dB/20 meters or less at a  
10 reference wavelength of about 1550 nm at a temperature of about -40 °C.

43. The fiber optic drop cable according to claim 41, wherein a maximum delta attenuation of the at least one optical waveguide during thermal cycling is about 0.1 dB/20 meters or less at a  
15 reference wavelength of about 1550 nm at a temperature of about -40 °C.

44. The fiber optic drop cable according to claim 41, the resin matrix of the at least one flexible roving having a percentage by weight of about 7 percent or less, the resin matrix being a water-based acrylic composition that includes an ethylene-acrylic acid.

25 45. The fiber optic drop cable according to claim 41, the fiber optic cable having an average shrinkage of about 1.0% or less during an average shrinkage test, wherein the average shrinkage test comprises taking a 1 meter sample of the fiber optic cable and exposing the 1 meter sample to a 70 °C environment in a  
30 thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20 °C, thereafter the average shrinkage of the 1 meter sample is measured.

46. The fiber optic drop cable according to claim 41, the fiber optic cable being a tubeless design.

47. The fiber optic drop cable according to claim 41, the cable having two rovings and a difference between an average shrinkage of the cable and an excess fiber length (EFL) being about 0.5% or less.

48. A fiber optic drop cable comprising:

10 at least one optical waveguide;

at least one flexible roving;

a cable jacket, the at least one flexible roving being attached to the cable jacket, the cable having an average shrinkage of about 0.5% or less during an average shrinkage test, 15 wherein the average shrinkage test comprises taking a 1 meter sample of the cable and exposing the 1 meter sample of the cable to a 70°C environment in a thermal chamber for at least thirty minutes and then allowing the 1 meter sample to cool to about 20°C, thereafter the average shrinkage of the 1 meter sample is 20 measured.

49. The fiber optic drop cable according to claim 48, wherein an average coefficient of thermal expansion (CTE) of the cable is about  $5.0 \times 10^{-3}$  %/°C or less.

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50. The fiber optic drop cable according to claim 48, wherein a maximum delta attenuation of the at least one optical waveguide during thermal cycling is about 0.3 dB/20 meters or less at a reference wavelength of about 1550 nm at a temperature of about 30 -40°C.

51. The fiber optic drop cable according to claim 48, wherein a maximum delta attenuation of the at least one optical waveguide during thermal cycling is about 0.1 dB/20 meters or less at a

reference wavelength of about 1550 nm at a temperature of about - 40°C.

52. The fiber optic drop cable according to claim 48, the resin matrix of the at least one flexible roving having a percentage by weight of about 7 percent or less, the resin matrix being a water-based acrylic composition that includes an ethylene-acrylic acid.

10 53. The fiber optic drop cable according to claim 48, the carrier section being a tubeless design.

15 54. The fiber optic drop cable according to claim 48, the cable having two rovings and a difference between the average shrinkage of the cable and an excess fiber length (EFL) being about 0.5% or less.